

ABSTRACT

MULTI-STAGE OPTICAL AMPLIFIER AND BROADBAND COMMUNICATION SYSTEM

A multi-stage optical amplifier that has an optical fiber with a first
5 length of amplifier fiber and a second length of amplifier fiber. The
optical fiber is configured to be coupled to a signal source that produces at
least a signal wavelength λ_s and a pump source that produces a pump
wavelength λ_p . Pump wavelength λ_p is less than signal wavelength λ_s .
Signal input, signal output and pump input ports are each coupled to the
10 optical fiber. A first lossy member is coupled to the optical fiber and
positioned between the first and second lengths of amplifier fiber. A
pump shunt is coupled to the signal input port and the signal output port.